Urbanization pattern of border districts of Rajasthan along radcliff line_a geopolitical analysis using remote sensing and geographical information system

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Synopsis of the proposed research plan

Submitted for the degree of

DOCTOR OF PHILOSOPHY
In
Geography

By

PINKY VAISHNAVA

Under the Supervision of

Dr. MONIKA KANNAN
Supervisor

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Sophia Girls' College, Ajmer

Maharshi Dayanand Saraswati University, Ajmer
(Rajasthan)

APPENDIX-IV-A

Format for outline of Proposed Research Work

(To be supplied in Four Copies)

(Reference Ord. 124.11)

1) **Name of Scholar** (In English) :Mrs. Pinky Vaishnava
(In Hindi) :पिंकी वैष्णव

2) **Title of the Research Work:** (In English): Urbanization Pattern of Border Districts of Rajasthan Along Radcliffe Line: A Geopolitical Analysis Through Remote Sensing and GIS

(In Hindi): (रेडक्लिफ सीमा रेखा से संलग्न राजस्थान के सीमान्त जिलो का नगरीकरण प्रतिमानः सुदूर संवेदन व भौगोलिक सूचना प्रणाली के द्वारा भूराजनीतिक अवलोकन)

3) Location

a. Institute/Department where the work is to be done:
(Department of Geography, Sophia Girls' College, Ajmer)
b. Geographical area of Investigation:

4) Introduction Importance of proposed Investigation, Objectives:
5) Review (Work already done on the subject of proposed Research Study):
6) Research Gaps identified in the proposed field of investigation (Based on the review):
7) Major Hypothesis, if any:
8) Research Methodology :
9) List of References cited:

Vaishnava 25th May 16

Signature of the Candidate with Date

Outline Approved

Dhruv Kanwar 25th May '16

Name and Signature of supervisor with date & seal

SOPHIA GIRLS COLLEGE
AJMER

APPENDIX - VI

MAHARSHI DAYANAND SARASWATI UNIVERSITY, AJMER

Certificate By Supervisor
Certified that :

1. I am willing to guide the research work of Shri/Km./Smt. Pinky Vaishnava on the above subject if he/she is registered for Ph.D.
2. To the best of my knowledge, the subject selected has not been studied and is not being studied so far in any University.
3. The subject is of sufficient scope to keep the candidate engaged for two years.
4. The subject will lead to a valuable contribution. I have seen and approved the outline of proposed research work submitted by the candidate.
5. I have 05 (give numbers) Research candidates registered under my supervision and the serial number of this candidate whose application is being forwarded for registration is 02 (give the serial number)
6. The candidate is not in a close relation (the term of close relation is defined in the examination ordinance of the University)

Mukta Kanwar
SOPHIA GIRLS COLLEGE AJMER 28th May '16

Signature of the Supervisor with date

Certified that the available facilities will be extended to Shri/Km./Smt. Pinky Vaishnava for research work if he/she is registered for Ph.D.

SOPHIA GIRLS COLLEGE AJMER

Signature of the Principal/ Director of the Institution with date

Mukta Kanwar
Sophia Girls Colly. 28th May '16

Signature of the Head, Department with date

SOPHIA GIRLS COLLEGE AJMER

Certificate

This is to certify that **Mrs. Pinky Vaishnava** Daughter of **Mr. B. P. Vaishnava** has qualified the Course Work of Paper-II & III for Registration for the Ph.D. programme in the **Department of Geography** of the **Sophia Girls' College, Ajmer** on 16th May 16

PRINCIPAL
SOPHIA GIRLS COLLEGE
AJMER

Signature with date

Principle

Signature with date 24th May'16

Supervisor and Head of the Department

SOPHIA GIRLS COLLEGE,
AJMER

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Urbanization Pattern of Border Districts of Rajasthan along Radcliffe Line: A Geopolitical Analysis through Remote Sensing and GIS

Introduction:-

India and Pakistan are two neighbouring countries in South Asia. Being the part of same continent the geographical conditions of both the countries are similar but they are, nevertheless, distinct nations from political point of view. There are no natural boundaries between India and Pakistan because of which many problems crop up every now and then. India shares 3,323 km. (including Line of Control (LOC) in Jammu & Kashmir) of its land border with Pakistan. Since India's partition based on Hindu and Muslim religious majority, these two countries are not in cordial terms. On 17th August 1947 the Radcliffe Line was declared as the boundary between India and Pakistan, following the Partition of India. The line is named after Sir Cyril Radcliffe who was commissioned to equitably divide 4, 50,000 km sq of territory with 88 million people. After the partition India and Pakistan have fought four wars in 1948, 1965, 1971 and 1999. After these wars, areas along the international border line are heavily militarized. The border areas are the most sensitive areas which are susceptible to infiltration by terrorists, smuggling of arms and ammunition, drug trafficking, illegal trade, crime, and insurgency. The border areas of India bordering Pakistan are more hostile than those, bordering with other countries. The areas in its close vicinity suffer in their growth more than others located at distance. Research states proximity to the International border with an unfriendly country proved detrimental to new investment in industry, trade and construction. The nature and degree of influence of an international border depend upon its age, the type of region it separates and the kind of relationship between countries on each side. Radcliffe line is a Geopolitical site between two nuclear-armed rivals, India and Pakistan. The border areas have strategic significance for the nation as they affect peace and security of a nation. The border and borderland between countries are very extensive and dynamic. Earth observation can play an important role in Borderland monitoring and management of resources. Airborne digital multispectral imaginary can be used to monitor the cross- border traits. This research is an attempt to identify the spatial-temporal changes of LULC in the border districts of Rajasthan through Remote Sensing and GIS techniques, to analyze the

Geopolitical implication of international border on the urbanization pattern of border districts.

Level of Urbanization in the Border Districts

Urbanization is a process of population growth in urban areas either through natural growth or immigration. Urbanization is a component of regional economic development because urban centers provide variety of centralized services for the surrounding zone of influence which are necessary for regional development. Cities have an important role to play in the life of people living in that area and are the indicators of urban growth, so the change in number of towns and changing sizes of cities are very important in the study of urbanization. Rajasthan situated in the north-western part of the country shares 1070 kilometers of long boundary with Pakistan. The boundaries of the districts of Ganganagar, Bikaner, Jaisalmer and Barmer are linked with the western boundary of Rajasthan adjacent to Pakistan. Areas adjacent to the Indo-Pak border in Rajasthan have experienced low urban growth. As per census 2011 level of urbanization among the border districts ranges from 33.86% in Bikaner to 6.98% in Barmer. Level of urbanization in Ganganagar and Bikaner is above the state average of 24.9%. Bikaner is the only district among the bordering districts which has urbanization rate above the National average of 32%. Out of the total 227 town of Rajasthan 22 are located in the border districts. Census of India classifies urban centers into six classes. Data reveals that there are only two cities Ganganagar and Bikaner which are even situated away from the international border. Border districts have maximum of class II, III and IV towns. Economic backwardness, low literacy rate, high population growth rate and immigrants from Pakistan resulted the low urbanization in Barmer and Jaisalmer districts while Ganganagar and Bikaner with productive intensive agriculture practices due to dense canal network, growth of agro based industries, mining and better infrastructure have higher urbanization rate.

Geographical Information System (GIS) is an essential tool used in this research in order to combine raster, vector data formats. With the help of vector data, point location map of settlements of Rajasthan is produced. This map will be used to assess the role of distance-decay factor. Towns will be grouped into six categories with a distance interval of 20 kilometers, number of towns falling in each category will be identified through the buffer technique and their collective growth rate by distance groups will also be calculated. Research states that the impact of international border found to be very

critical up to a distance of 40 kilometers, moderate between 40 to 100 kilometers and negligible beyond the 100 kilometers. Contrary to normal expectation, smaller towns grow faster than large ones as smaller towns need lesser resources for their development as compared to the lager towns. To know about the specialized services perform by these towns, they will be classified on the basis of dominant or specialized function. Their results will be very helpful in knowing about the growth of different functional towns. Temporal urban changes will be traced visually and statistical analyzed between studied years with the model structured through GIS. This study is aimed to monitor urban changes with remote sensing data. Remote Sensing techniques are extremely useful for change detection analysis and selection of sites for specific facilities such as hospitals, restaurants, solid waste disposal and industry etc.

Resource Development in Border districts

Towns in the Ganganagar district are compact and grew fast due to irrigation based agriculture development and agro based industrialization. Industrial growth in the town is less due to higher labour and transport cost. Human development index (HDI) is 0.779 which is not just highest among the border districts it is even higher than the state and national average. The construction of Indira Gandhi Canal in the dry lands of Sri Ganganagar, Bikaner, Jaisalmer and Barmer has transformed the ecology, economy and society. It has influenced the environmental conditions of the region both positively and negatively. Spread of canal irrigation has led to increase in cultivated area and intensity of cropping by increasing the soil moisture. Traditional crops in the region have been replaced by wheat, cotton, groundnut and rice. Except Ganganagar population density is less West of Indira Gandhi Canal due to the negative impact of border and arid climatic zone, while in Ganganagar the situation is just opposite due to large network of canals and road. Northern Bikaner has compact settlements as compared to its southern region which has semi-clustered settlements as its northern boundary is attached to Ganganagar District and like Ganganagar transport and communication facilities and household status is better with good electricity, safe drinking water and toilet facilities available, even net irrigated area to net sown area and gross irrigated are to grass cropped areas is quite good due to better network of canals. The town is famous for delicacies like Rasgullas, Bhujias and Papads. It has become a big wool production centre and has a unique Camel research farm and lignite based thermal power plant. Bikaner has many cottage and small scale industries. The district Bikaner is thus vast sandy tracks except Kolayat are covered with sand of Rock locally known as “Magra” are found is parts Kolayat tehsil. In the magra

areas various types of sand stone, clay and lime stone are found at different levels. Fuller's earth, Clay, lignite and gypsum, white clay and grit and important economic minerals being produced in the district which have change the Barmer's economy. Better infrastructure and improvement in basic facilities has resulted high HDI score 0.779 which is higher than the state and national average. Barmer is included in the list of most backward districts of the country due to shortage of basic infrastructure like education institutes, health care centers, market facility, Industries, welfare centers, recreational facilities, transport and communication services etc. Barmer has more of villages and hamlets situated along the border due to insufficient basic facilities. Barmer is a potential resource region of Rajasthan popular for minerals like bentoonite, gypsum. Fullers earth, selenite, silica sand, bajari, masonry stone and fossil fuels. It has the Rajasthan's first lignite based thermal power plant situated; British Oil Company Cairn Energy has discovered many oil reserves in the district and has drilled 21 oil wells in Sanchore Basin till 2012. Based on these oil reserves Government of India has planned to build a big oil refinery at Pachpadra which is going to transform the economy of the district by developing the region as petrochemical hub. It is even famous for its carved wooden furniture and hand block printing industry. Trade and commerce is also important function in the city with industrial activities. Share of agriculture is least. The people are mostly labor class working in industries, Shops, restaurants, transport and others. Poor immigrants from Pakistan have increased the rural population in Barmer and Jaisalmer. Jaisalmer being almost a desert area and thus negligible forest growth, scarcity of water resources and low production of agricultural crops, the pace of industrial development in the district has remained at the lower side due to that the settlements are also scattered in the district. The situation is worst along the border. Jaisalmer with 17 persons per square kilometers has lowest population density in the state. District has mostly small scale industries due to shortage of raw material, technical knowhow, and unskilled labour. Average investment in plant or industry is just Rs.10, 000. Vast resources of cement grade limestone exist in the area. Availability of chemical and high grade limestone paves way for setting of chemical industries. Natural gas reserves have been discovered near Ghotaru, Ramgarh, Tanot all of which are situated near Indo-Pak Border. Gas based power plant has started production near Ramgarh. There is further scope for setting up of such plants. Yellow stone and stand stone of Jaisalmer is world famous and cutting and polishing industries can be establish based on their deposits. Border districts even have

high potential of generating solar energy, wind energy, Bio energy and Thermal energy. However, these Natural resources have not been used optimally.

Border Area Development Programme

Border Area Development Programme (BADP) was introduced in the year 1993-94 with the objective of building the much needed social and physical infrastructure to propel normal development activities and to enhance household incomes to promote economic growth. As per the new guidelines, BADP is to be implemented in a phased manner. The first phase is to be implemented in the 0-10 Kilometer range from the border areas. The State Government can start the work in the area beyond 10 km only after completion of all developmental works under first phase, which is very difficult to achieve. Though BADP mandates that no work should be allotted beyond 10 km unless 0-10 km (from border) area is saturated, but no criterion has been fixed to determine if area is saturated. It was found that people of the border areas of Rajasthan were not satisfied with the work done under BADP.

Importance of proposed investigation

The aim of the research is to investigate the urban development gaps existing between Border districts of Rajasthan and its core regions. Though India is among the most fast growing economies of the world but its border security is a major concern. That is why its border areas are quite less developed as comparative to its interior regions as areas under border situation suffers more in their growth than the ones which are away from it, especially when the bordering countries are not in cordial terms with each other.

The border districts of Rajasthan have high potential to develop economically. However, the natural resources of the region especially Solar energy, Wind energy, Biogas and thermal energy and non metallic minerals have not been harnessed properly. In spite of resourcefulness the border districts are not equally developed. Ganganagar and Bikaner have high urban and economic growth as compared to Jaisalmer and Barmer. By utilizing the potential resources socio-economic status of the districts can be improved as process of economic growth will lead to a further rise in the level of urbanization as in case of Bikaner and Ganganagar where Urbanization and HDI rate is higher than National average. Developed countries like China and USA has even developed and implemented a series of preferential policies to support urban development in border areas and to strengthen the national identity of residents living there.

Urbanization becomes a part and parcel of economic development of a country. Better urban growth even in the border district will be a boon for the state and national economy. This study is an effort to analyze the urbanization level along the international Border in the state of Rajasthan and identify the special developmental needs of the people living in remote and inaccessible areas situated near the international border to suggest strategies for decision makers to facilitate the Barmer border areas with the required essential infrastructure for improving the urbanization level. Urban planning requires a large volume of data both at the time of planning and at the time of implementation of the plan to determine the status of the available facilities. Thus remote sensing and GIS techniques provide accurate, orderly and reliable information for planning and management of a town and its resources. The conclusion of the research work will be very helpful for the urban planners, policy makers, administrators and researchers in making an action plan for the urban development of country's most sensitive areas.

Area of study

The state of Rajasthan is located in the north-western part of India between 23º3' to 30º12' N latitudes and 69º30' to 78º17' E longitudes. The boundaries of the districts of Ganganagar (210kms), Bikaner (168kms), Jaisalmer (464kms) and Barmer (228kms) are linked with the western boundary of Rajasthan adjacent to Pakistan. The boundary commences from Hindumalkot in Ganganagar Tehsil to Shahgarh in Chohtan tehsil of Barmer. Along the western boundary of Rajasthan, the western sandy plain and Pakistan face each other across the International boundary for about 1070kms. This boundary is basically natural as it passes across the bleak, inhospitable and waste lands of the sandy arid plains. The region is mostly a sand covered pen plain in which rocky outcrops appear through the sand. Above the sandy arid plains Ghaggar plains cover the three-forth area of Ganganagar district. This plain is sandy plain interspersed sand hills. The northern half of the region is fully canalled and thus is made productive. The south western portion is a combination of sandy and semi canalled area. Except the canal network drainage is seasonal in the border districts. Maximum of net irrigated area and gross irrigated area of border districts is under canal irrigation. The climate of the region is characterized by great extremes of temperature. The maximum daily temperature goes up to 42º to 45º C during summer month. It is one of the hottest regions of India and because the diurnal

range is large the minimum daily temperature drop down considerably. The mean annual rainfall is highly erratic in its incidence, varies from 10cm on Indo-Pak border to 30cm on eastern edge of border district. Expect the narrow track of alluvium in Ganganagar district the soil in the border region sandy in texture and saline in nature and generally is poor in organic matter. The four border districts of Rajasthan cover 31% of the total geographical area of Rajasthan. As per census 2011, population in the border district is 760712 which are the 11%of the state's population. The border districts have lowest population density in the state. Decadal growth rate recorded in the period of 2001-11 is highest in the Barmer district (32.5), even Bikaner and Jaisalmer has decadal growth above the state and national average. Ganganagar with 10.06 has lowest among all districts. Sex ratio in all 4 districts is lower than the state and national average.

Objectives

The proposed study will be undertaken with the following objectives:

1) To identify and analyze the urbanization pattern of the districts of Rajasthan adjacent to International Border.
2) To study the Geopolitical impact of International Border on the urban growth of the study region through Satellite data pertaining from 1972 to 2015.
3) To identify the special developmental needs of the people living in remote and inaccessible areas situated near the international border and to prepare priority zonation map of the study region using GIS technique.
4) To evaluate the existing levels of urban development for identifying the potential areas for intervention for future development
5) To suggest strategies for decision makers to saturate the border areas with the entire essential infrastructure to improve the quality of life of the people in the districts of Rajasthan bordering Radcliffe line.

Review of literature

Raj Bala and Gopal Krishna (1982), on this research entitled "Urbanization in a Border region: A case study of India's border district adjoining Pakistan." identified that nature and degree on influence of an international border depends upon it age, the type of region

it's separate and kind of relationship between countries on each side. The most damaging effect of the border seen in the most developed and most populous areas the Punjab sector. Consistent with its newly acquired strategic position, the Jammu and Kashmir sector, by contrast, recorded a fast growth of town. The impact of the border was confined to a narrow zone in Rajasthan sector and towns remained virtually unaffected in the Gujarat sector.

R. Ramachandra(1991) in his study "Urbanization and Urban System in India." emphases on three major aspects of Patterns of Urbanization: level of urbanization, spatial structural patterns and macro spatial patterns. The first two are discussed using the state as the basic spatial unit of analysis, while the third discusses patterns not revealed by the use of states as unit of analysis. Furthermore, Census data for 1981 is used in the former, while the latter is based on an analysis of distribution maps of towns and cities.

Mazid Husain(1994)in his book "Political Geography "discussed about the different types of boundaries and their origin, boundary zone as index of growth and decline, economic factors in expanding boundaries and their political and economic significance, border nomads as frontier police and border refugees resulting ethnic mingling.

World Health Organization (1996) found in the study that the health situation in border areas was complicated. The health infrastructure in border areas is mostly ill-developed. Epidemiological surveillance is poor. People living in either side of international borders often belong to different ethnic groups having different attitudes, beliefs and practices on disease perception. These differences quite often create difficulties in the acceptance of common health practices. The study suggested that situation at international borders had many problems for carrying out co-ordinate efforts in disease surveillance, implementation of control activities, sharing of information and facilities.

R. B. Mandal(2000) in his book "Urban Geography A Textbook" used different methods to calculate both the level urbanization as well as the pace of urbanization among various states of India. Urban populations of India from 2001 to 2021 have been estimated on the basis of arithmetic and geometric progression.

Thiyam Bharat Singh (2001) the present study "A Study on Indo-Myanmar Border Trade", attempts to examine the India's border trade with Myanmar at Moreh in India and Tamu in Myanmar. The three-tier system of trade Border trade can be enhanced significantly by improving the position of infrastructure on both sides of the border. By inclusion of manufactured products of Indian origin can minimize the volume of illegal and informal trade between the borders. Certain restrictions and difficulties involved in

the border trade should be simplified to facilitate the trade. There is an urgent to create a congenial atmosphere to the border area to promote the trade. This can minimize the trade-impeding factors in the border.

B. Thakur. **et al. (2005)** in their book entitled "Urban and Regional Development in India" provided a unique example of processes of urbanization in Sikkim. The methods used to calculate the level of urbanization in different districts of Sikkim state will be very effective in present research. The analysis shown urbanization in Sikkim had an increasing trend during the period of 1951 to 1981and declining trends during 1981-91 due to the effect of economic, social, political change and migration patterns. The process of urbanization is not only desirable but essential for economic growth and social change.

GoncaCoskun , UgurAlganci and GokceUsta (2008), "Analysis of Land Use Change and Urbanization in the Kucukcekmece Water Basin (Istanbul, Turkey) with Temporal Satellite Data using Remote Sensing and GIS" this paper presents an image analysis study using multi temporal digital satellite imagery of LULC and changes in the Kucukcekmece Watershed (Metropolitan Istanbul, Turkey) from 1992 to 2006. The Kucukcekmece Basin includes portions of the Kucukcekmece District within the municipality of Istanbul faces a dramatic urbanization. A change detection method controlled with ground truth information was then used to determine changes in land cover.

Project Report on Problems of Border Areas in North East India (2009), a comprehensive study of the border areas of the country falling in the Northeast region is made under the sponsorship of the Thirteenth Finance Commission (TFC) of Government of India. The topography, accessibility, climate, altitude, population density, ethnicity, levels of development, the relationships with the border countries etc. of the entire border region of the North East widely vary. Therefore, the development strategy for different border segments will be different. Therefore, different segments of border have been studied by different research teams, which have been presented in this report in consolidated form.

Toshihiro Kudo (2009),"Border Area Development in the GMS: Turning the Periphery into the center of Growth" this Paper examined the location advantages of border areas, in particular of those between less developed regions and developed ones. They include complementary factor endowment, cross-border infrastructure services and the degree of economic integration and border barriers. Special economic zones (SEZs) located in the border areas can effectively exploit such location advantages and contribute to the formation of industrial clusters in border areas.

Om Shankar Jha (2009), "Community Participation in Border Management: Challenges and Options" this paper examines that state has a major role in securing war frontier, the populations along territorial peripheries, too, can play an important role in securing our interests. This would entail reconceptualising the concept of border guarding to effective border management, where local people became the centre of gravity of all actions. The border guarding forces have to evolve ways and means to mainstream the local population in the management of border areas.

ShailenderArya (2011)"Infrastructure Development and Chinese War Waging abilities in Tibet" the present paper attempts to discuss the China's world class infrastructure on the Tibetan plateau in terms of highways, rail links, airports, logistic installations and oil pipelines which have civilian as well as military usage, allowing China to settle its Han majority population into these sparsely populated areas, project power in Central and South Asia, and make sustained efforts to integrate these alien areas. These unprecedented infrastructure developments have significantly multiplied the war waging capabilities of China, including against India. The over-reaching Chinese military, security and economic ambitions have ensured the transformation of once buffer state of Tibet into another Chinese province where infrastructure clearly exceeds the current demographic and security requirements.

Aviotech (2012), the Study conducted on "India's border security infrastructure" discusses about the better intelligence, force modernization and meeting equipment needs as immediate priorities in border management. The Indian Ministry of Home Affairs has in the recent past paid special attention to border fencing, border road works, floodlighting, Border out posts, Air support and Budgets. Coordination of Central and state-level efforts and the appropriate mix of trade and immigration policies will demand similar attention over the medium term.

Annette Weber (2012), research carried out on "Boundaries with Issues" identified that Borders, boundaries, and borderlands constitute multiple possibilities as well as obstacles. Border issues such as oil, migration, pastoralists, citizenship, trade, and nationality must be negotiated and administered. Mutually tended borders – demarcated or not – might bring a variety of positive effects. Border populations as a source of knowledge and trade potential and transnational citizenship should be assets from a regional as well as national perspective.

Amandeep Singh (2012) "Evaluation of Major Centrally Sponsored Development Scheme in the Border Areas of Punjab" present study was undertaken to examine the

impact of centrally sponsored development schemes in the border area of Punjab. For the purpose three schemes namely; (BADP), (MPLADS) and (PMGSY) have been selected to assess the availability of funds and existing status of development infrastructure, problems of its maintenance and the level of critical gap in the physical and social infrastructure requirement of the blocks for sustainable development. It has been found that root problem for proper implementation of development work was the political interference.

Praveen Kumar Rai and V. K. Kumra (2012), "Role of Geoinformatics in Urban Planning" the research is based on application of Remote Sensing and GIS capable of extracting urban land cover information with robust results. Satellite remote sensing with repetitive and synoptic viewing capabilities, as well as multispectral capabilities, is a powerful tool for mapping and monitoring the ecological changes in the urban core and in the peripheral land use planning, will help to reduce unplanned urban sprawl and the associated loss of natural surrounding and biodiversity.

Isher Judge Ahluwalia (2013-14)"Planning for Urban Development in India", this paper presents a brief overview of the present approach to urban planning in India and highlights the importance of an integrated approach to the planning of transportation and land use. It presents the conundrum of high population density and low FSI (floor space index) in Indian cities and calls for a new approach to urban planning which brings socio-economic factors and spatial factors together, and also integrates urban design with urban planning.

Dr.Suja.R. et al.(2013). "Evaluation of Urban growth and expansion using Remote sensing and GIS". The study addresses the urbanization of Thiruvananthapuram district of Kerala in both spatial and temporal contexts. The urban expansion of the central city and the satellite towns has been explored. Buffer gradient analysis is employed by integrating the prospects of remote sensing and GIS. The period of study ranges from 1990 to 2006. Results indicate the major directional growth was observed to be in the NNE slice. All the major clustered growth was seen near to the road junctions.

Zahoor Ahmad Malik and Dr. G.K. Sharma (2014),"India-Pakistan peace process during UPA government" this paper elucidates on the concept of a peace process and its spoilers in the context of India-Pakistan relations. The course of the bilateral relationship between India and Pakistan, even since the inception of these two states in 1947, has never been smooth. The peace process which started in 2003 has had its twists and turns, but there has been a renewed energy since 2011.

Qianlong Bie, Cansong Li and Shangyi Zhou (2014), the paper **"**Evaluation of the Effectiveness of Border Policies in Dehong Prefecture of Yunnan, China", In this paper, a perspective is provided for evaluating the effectiveness of China's border policy based on the Kaldor-Hicks analysis method. We investigated the border policies in Dehong Autonomous Prefecture in Yunnan province of China from 1949 to 2012, and evaluated the effectiveness of the border policy using the Kaldor-Hicks method. The conclusions include: first, the Kaldor-Hicks method can be seen as effective method to evaluate the effectiveness of China's border policies. Second, based on the Kaldor-Hicks method, it was observed that the overall effects of the adjustments made to the border policies in Dehong Prefecture were positive.

ShivitBakrania (2014), This study "Libya: Border Security and regional cooperation" examines security related developments that determine Libya's relationships with its neighbours namely Algeria, Chad, Egypt, Niger, Sudan and Tunisia. Libya's border control is weak and fragmented, allowing markets in arms, people, and the trafficking of illicit goods to flourish, with detrimental consequences for the Maghreb and Sahel. The report looks at the incentives for neighbouring countries to maintain or develop regional relationships or cross border mechanisms with Libya and the main challenges in implementing them. Finally, an overview is provided of international agency (*United* Nations Support Mission in Libya (UNSMIL) contributions to border management and security in the Sahel and Maghreb

Utpal Kumar (2015), "A Regional Perspective on Development in Western Border Areas of India" The study aims to assess the levels of socio-economic development in border districts of India situated in western part of the country. It tries to understand the spatial patterns of development in the area to measure the levels of deprivation or development in the area in comparison to the parent states as well as national average of the country. The findings of this paper show that Border areas are lagging behind in the process of development as performance of border districts is worse than the parent states.

NITI AAYOG (2015),"Evaluation Study on Border Area Development Programme" The evaluation study has covered various aspects of the planning, implementation and impact of BADP in the border states of Assam, Gujarat, Punjab, Rajasthan, Tripura and West Bengal. The findings of the study tend to suggest that, to a large extend, BADP has contributed towards creating an enabling environment for undertaking normal economic activities in border areas an expanding development opportunities for the local

population. However, the degree of success varies between states and across sectors in a state.

Dr. Binoybrot Rajkhowa (2016), the study conducted on "The Trends in Urbanization in the North East India: Its Implication to the Regional Economy" identified that rapid growth of urbanization in North East India has serious consequences on the economy of the region. The undue concentration of population in most of the towns in North Eastern States results in a number of problems for the inhabitants of the towns. The cities and towns are facing challenges of meeting the conflicting goals of catering to the demands of global capital market on the one hand and for providing access to employment, land and basic amenities to the local population on the other.

Research Gaps

With the process of globalization, many political geographers and research institutions have begun to focus on borders and border areas. The literatures on border effects reveal that national boundaries have a significant impact on the economic, social and cultural life and relations of countries. It is increasingly important to evaluate the effects of a border from a wide range of perspectives. Some scholars have focused on the significance of borders and analyzed the border policies and programme from the perspective of the national economy, national development, security and equality. A lot of research work has been done on the urban growth and trends of urbanization indifferent states of India but less on the urban and economic growth along the Radcliffe line. Most available literature does not provide a thorough research on impact assessment of international border on urbanization. The major limitations of the previous studies have been their lack of integrated approach towards the complete geopolitical analysis of the urbanization trend along the international border and furthermore no detailed studies were available on the border areas of Rajasthan in this regard. The present study is a modest attempt to fill this gap.

Hypothesis

- Border districts are likely to suffer in their urban growth when countries are not in cordial terms with each other.
- If security and living conditions are improved and community facilities are provided in the form of better infrastructure, the negative impact of international border on urbanization can be reduced.

Research Methodology

The research work is based on both the primary and secondary data. The primary data will be collected through field survey, observation, sampling, personal interviews to examine the basic facilities available to the people along the border and away from it and questionnaire survey will be conducted to find out the public opinion on various aspects of Border Area Development Programme and also information will be collected from the Government offices of the District headquarters.

The secondary sources of information will be State Government and Government of India's official websites, District statistical abstracts published by the Directorate, Census of India 2011(District Census Handbook), the various published sources on various aspects of Border Area Development Programme and other urban development schemes. The satellite imageries will be refereed to evaluate and compare the Land Use/Land Cover of the study region obtained from (Bhuvan) National Remote Sensing Agency, Hyderabad, United States Geological Survey, USA**,** Regional Remote Sensing Centre, Jodhpur, State Remote Sensing Application Centre Department of Informational Technology, Jodhpur. Satellite remote sensing with repetitive and synoptic viewing capabilities, as well as multispectral capabilities, is a powerful tool for mapping and monitoring the ecological changes in the study region. Liss-3, LandSat, Digital Elevation Model (SRTEM, ASTER, Cartosat-1) and Toposheet of the Rajasthan (1:250000) will be the main sources of investigation and mapping the study region. Moreover, the published books, journals, articles of news papers and magazines are sources of data and information. The collected data will be processed, tabulated and analyzed with appropriate cartographic and GIS techniques and statistical measures.

Work plan/ organization of the proposed Research work

The proposed research work will be carried out as per stipulated time schedule.

1st six months- Review of literature with reference to proposed research field.

2nd six months– Collection, compilation, classification of data and presentation of Maps, diagrams through Computer Cartography

3rd six months-Analysis of maps, diagrams, Satellites images, tabulated data and interpretation of results

4thsix months-Compilation of the Research Work

4. Chapterization

Chapter 1. Introduction

- 1.1 Importance of the study
- 1.2 Importance of the study
- 1.3 Objective
- 1.4 Methodology
- 1.5 Review of the literature
- 1.6 Research Gap

Chapter 2. Geographical profile of the Border Districts of Rajasthan

- 2.1 Physiography of the Border Districts
- 2.2 Administrative Set up
- 2.3 Demography
- 2.4 Climate
- 2.4 Drainage
- 2.5 Vegetation
- 2.6 Soil distribution
- 2.7 Mineral and Energy resources
- 2.8 Land Use Land Cover

Chapter 3.Pattern and Trends of Urbanization

- 3.1 Definition of Urban Places
- 3.2 Migration
- 3.3 Urbanization Pattern
- 3.4 Trends of Urbanization
- 3.5 Classification of urban places
- 3.6 Urban ecology and land use
- 3.7 Role of urbanization
- 3.8 Problems in urban development
- 3.9 National commission on Urbanization and Urban Development
- 3.10 Urbanization policy

Chapter 4.Urbanization in border districts of Rajasthan (Identification through Census Data and GIS Data Base Management System)

4.1 Role of Geo-informatics in managing Border and Resources

4.2 Settlement pattern, their distribution and housing Schemes

4.3 Major and minor industries

4.4 Tourism as an industry

4.5 Network of transport and communication

4.6 Human Development Index

4.7 Occupational structure

4.8 Socio-Economic Status

4.9 Environmental Conditions

4.10 Urbanization level

Chapter 5. Role of Border Area Development Programme in the growth of the Barmer district.

5.1 Central Development Programme

5.2 Major schemes launched

5.3 Availability of funds and Infrastructure Development

5.4 Impact, Performance and Effectiveness of the Schemes

5.5 Participation of Women in BADP Programme

5.6 Development and Intervention Possibilities

5.7 Constraints and Recommendations

Chapter 6. Geopolitical Scenario along the Radcliffe line

6.1 The concept of geopolitics

6.2 Pre and post partition political scenario

6.3 Geographically related strategic issues

6.4 Geopolitical risk, security and stability

6.5 Cooperation potential

6.6 Borderland planning and management through GIS data modeling

Chapter 7.Impact of Radcliffe line on the urban growth of Border Districts

7.1 Boundary Commission Declaration

7.2 Political Disturbances in Region

7.3 Challenges faced by the people

7.4 Topographical constrains

7.5 Urban Growth pattern in the border districts

7.6 Problems of urban development

Chapter 7. Summary and conclusions

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